A.—Sri H. C. BORAIAH (Parliamentary Secretary to Minister for Agriculture).—

(*a*) Approximately 71,000 acres in 1963-64.

(*b*) 10,694 acres were treated with pesticides. Other control measures like cultural and mechanical methods were taken up in the remaining areas. The total amount spent was Rs. 26,324.

(*c*) A scheme costing Rs. 18,750 has been sanctioned for the year 1964-65 in connection with the Deccan Wingless Grass Hopper Control Campaign on Jowar in this District. An area of nearly 12,000 acres has been protected.

Agricultural Research Centres in the State.

**Q.*—517. Sri C. M. REVANASIDDAIAH (Siruguppa).—

Will the Government be pleased to state :—

(*a*) the number of Central and State Agricultural Research Centres in the State;

(*b*) the annual expenditure incurred by them on these centres together with the income derived therefrom ;

(*c*) the results of research conducted in 1963 in these centres and the benefit derived by ryots from such results ?

A.—Sri H. C. BORAIAH (Parliamentary Secretary to Minister for Agriculture).—

	Central.	*State.*
(*a*) Agriculture Department.	1	32
(*b*) Agriculture Department.	As shown in Appendix "A".	
(*c*) Agriculture Department.	Explained in Appendix "B".	

APPENDIX 'A'

The number of Central and State Agricultural Research Institutes, Agricultural Research Stations and Agricultural Experimental Farms in the Mysore State and their expenditure and revenue for the year 1962-63.

Type of Institute		Name of the Institution	Expenditure 1962—63	Revenue 1962—63
1		2	3	4
I Agricultural Research Institutes.	1	Agricultural College and Research Institute, Dharwar	760,170	3,10,466
	2	Agricultural College and Research Institute, Hebbal, (Bangalore)	5,63,705	52,426
	3	Agricultural Research Institute, Mandya	1,36,855	1,35,115
	4	Agricultural Research Institute, Naganahalli	47,034	14,000
II Agricultural Research Stations.	1	Agricultural Station, Bijapur	57,953	39,515
	2	,, Bagalkot	25,912	1,314
	3	,, Nipani	64,687	15,289
	4	,, Arbhavi	32,603	14,037
	5	,, Bailhongal	41,231	3,092
	6	,, Sankeshwar	47,036	34,158
	7	,, Gangavathi	65,771-59	
	8	,, Dharwar	65,526	22,957
	9	,, Sirsi	22,215	7,140
	10	,, Annigeri	13,059	2,788
	11	,, Gadag	24510-22	2,830
	12	,, Mugad	25,489	10,859
	13	,, Raichur	53,117	7,193
	14	,, Siruguppa	83145-58	22,784-72
	15	,, Hagari	59743-00	10,246
	16	,, Thirthahalli	63,283	25,792
	17	,, Hiriyur	65,792	30,090
	18	,, Arasikere	52,810	11,174
	19	,, Mangalore	54,671	18,844
	20	,, Saundatti	58,379	8,666
	21	,, Nargund		

(SRI H. C. BORAIAH)

At the Government Main Farm, Raichur, varietal trials conducted on white seeded Kharif Jowar has proved the superiority of D. 340 over all other varieties. Among Rabi varieties, M. 35-1 has proved to be the best. The manurial experiment conducted on Rabi Jowar since 1957-1960 has shown that N. 30 PIO is the best and most economical manurial dose for Rabi Jowar.

4. *Oilseeds*: Indigenous and exotic varieties in groundnut were collected at the Oilseed Research Sub-Station, Raichur. The variety TMV-2 gave promising results.

22 Selections were effected in erect types of groundnut strains No. 200, 206, 214, 198, 209 and 202 have registered significantly superior to local and TMV-2.

4 Selections have been made in spreading type which are found to be high yielders than local.

As a result of manurial experiment conducted at the Government main farm, Raichur, the best manurial combination for groundnut was found to be N 10, P 50.

As a result of breeding work done at Agricultural Research Station, Hebbal, the strains HG-7, HG-8, and HG-10, were recommended for cultivation.

Four promising strains of Linseed are in large scale trial at Agricultural Research Station, Raichur, seven promising strains of safflower are also under varietal test.

5. *Sugarcane*: As a result of breeding and varietal trials conducted at S. R. S. Mandya, it was revealed that H.0946, H. 1011, H. 1018, Co 745 Co 851 Co 899, Co 1198, Co 1215, Co 1001 and Q 49 were highly promising.

The three years average data of phosphatic carrier and placement experiment indicated that, the treatment 100 lbs P 205 with compost as carried applied 4" deep has given the highest yield of cane and sugar of 59.34 tons and 8.46 tons per acre respectively. Use of placement implements for applying fertilisers have been recommended.

Application of P 205 through Sunhemp has increased the yield of Cane and Sugar. Growing sunhemp 3 months in advance by applying 75 lbs. P 205 per acre and incorporating it is in the soil prior to flowering has been recommended for adoption.

At S. R. S. Gangavathi, the variety Co 678 has recorded the highest yield of 46-66 tons per acre.

The N.P. K. experiment on Sugarcane revealed that the treatment of 300 lbs. N. in combination with 200 lbs. K.20 has recorded the highest yield of 44.43 tons per acre.

As a result of the spacing cum graded levels of nitrogen experiment conducted, it was found out that the treatment 3 feet spacing with 300 lbs.

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1		2	3	4
III Agricultural Experimental Farms	1	Agricultural Experimental Farm, Alnawar clubbed with A R Institute, Mandya		
	2	,, Mercara	6,492	6,926-82
	3	,, Ponnampet	11,676	3,118
	4	,, Ankola	18,405	1,200
	5	,, Shimoga	89,502	5,180
	6	,, Virajpet		
	7	,, Kaladgi	figures clubbed in 20-21	

Areca Research Station, Hirehalli:—This Centre is not under the Administrative control of this Department.

APPENDIX 'B'

A Note of the Results of Research conducted and the benefits derived by ryots by such results.

While making an assessment of the results of research and the benefits derived by ryots from such results in the field of Agriculture, it should be borne in mind that research is a long drawn process and the results cannot be attributed solely to the work done during a particular year.

In order to have a well planned and intensive programme of research without which the development of Agriculture cannot progress beyond a certain limit, the research programmes of all the farms in the State have been reoriented so as to solve the various problems confronting the cultivators. Research work on paddy, jowar, sugarcane, oilseeds, coconut, arecanut, cotton, tobacco, maize, pulses, fodder etc. are in progress in various Agricultural Research Stations in the State. Appreciable results on the application fungicides, fertilisers have been obtained and are becoming popular with the farmers. New methods and techniques evolved as a result of research, to suit the requirements of the tracts are underway. Though it would be very elaborate to make mention of the different items of research work that are being conducted in different section, stations, of the department and the exact stage of the work that is being done, it is possible to mention briefly the highlights as under.

1. *Paddy.* Among the seven strains evolved at the Paddy Breeding Station, Mangalore 3 strains namely MGL-7, MGL-4 and MGL-5 have been released for general cultivation. At Agricultural Research Station, Nagenanally, in the trial of short duration type conducted on the farm, the varieties SR 26B, Co 27, HR 39 and HR 38 have performed better than others in farm trials. Among them SR 26 B has already become popular in the area and it is note-worthy to mention that this is also a salt resistant variety giving heavy yiled.

At Agricultural Research Station, Mugad, a superior strain K-44-1 has been obtained by selection work and has been released for general cultivation. This gives 29 per cent more yield than the local. As a result of hybridisation work 5 strains namely 256 purple, 449-17, 253, 246-13, 26-10 have been evolved are now ready for general cultivation.

At Agricultural Research Station, Sirsi, as a result of selection work, H 15-2 and M 30-4 which yield better than local standards are now ready for general cultivation.

In introduction trials AKP.9 and T.141 have been found to be very high yielders. AKP.9 is blast resistant and T.141 is Helminthosporium resistant. They have been released for general cultivation in North Kanara.

At Ponnampet selection work resulted in the isolation of K.B. 356 and M.B. 319 and they are released for general cultivation in Coorg District.

2. *Ragi.* (i) *Premonsoon or Kar Ragi :*—Two new strains *viz* N-9-1 and 20-23-24 were released for District trails out of which N-9-1 has proved to be highly promising in cultivators field.

(ii) *Monsoon or Hain Ragii* :—Two dry *cuuu wet land varieties, viz.* 50-39-21 and 50-39-13 were released for Distritttrialsout of which the former has given highly encouraging results.

(iii) *Summer Ragi* :—The 3 promising strains, Aruna, Udaya, and Poorna released during 1957-1959 have become popular and are extensively cultivated by the cultivators and most of the old uneconomical types have been replaced by these strains during 1959-1963.

3. *Jowar, Millets and Pulses* :—At the Agricultural Research Station, Hiriyur, work on Rabi, Jowar is being done. 6 Promising selections were under test out of which L-19 and L-25 have recorded 110 per cent and 114 per cent more yield than the check respectively.

Work on millets like Same, Hejjave, Barangu, Oodalu, Haraka and Sajji is also being done here. The collections are being maintained.

At the Agricultural Research Station, Dharwar, as a result of work on Jowar, selections such as Nandyal, Ugar white, yellow and Bilichiya have already been released for general cultivation.

At Agricultural Research Station, Hagari, district trials of 5 promising Rabi cultives *viz.* J. 775 J. 761 J. 718, J 720.-2-6-2 and J. 763 are in progress.

(SRI H. C. BORAIAH)

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As a result of the spacing cum graded levels of nitrogen experiment conducted, it was found out that the treatment 3 feet spacing with 300 lbs.

N. and 3 ft. spacing with 450 lbs. N. have given the highest yield of 30.21 and 41.02 tons per acre in Eksali and Adsali seasons respectively.

At Sankeshwar, the variety Co. 740 has been recommended for district trials at Belgaum and Malnad areas.

6. *Cotton* :—Various cotton breeding schemes are in operation in the different tracts of the State. Outstanding results in the form of the evolution of varieties like "Laxmi, Mysore American, Jayadhar," which are at present covering extensive areas have been obtained. Work on the further improvement of these is in progress and very valuable materials are on hand which need further critical tests in the cultivators holdings.

For the low rainfall area of the Eastern Part of Bombay Karnakak, as train BC. 1 has been isolated. The yields of BC-1 which is named as "Suryodhar" are very good and consistant. It is early by about a fortnight and is capable of spinning 38's against 24's of Jayadhar.

As a result of the breeding work done under the scheme for breeding extra long staple cotton in Mysore, a variety M.A. 5, dual purpose variety, resistant to Red laf, Jassids and Blackarm was evolved and is under cultivation in the entire Mysore American Area.

At Dharwar, work on replacement of Jayadhar by a high yielding and high spinning variety is in progress and cultures in advanced generation are under critical study. In the meantime, work on the further improvement of re-selection in Jayadhar was taken up and as a result of this, a reselected strain has been isolated. Tests conducted on the cultivators fields have indicatd the superiority of this strain in qualitative and quantitative character.

For the red soil area of about 30,000 acres in the low rainfall region of Bellary and Chitradurga districts, a strain 3930 was isolated and this has proved to be superior to H. 420 that is now being grown there.

In order to evolve a resistant variety to the Cotton black arm disease which is the most serious bacterial disease that reduces the yield of cotton to a very high percentage, breeding work was initiated and resulted in the evolution of strains like 170-Co-1,22 and 125-Co-2-18-2 which are 100 per cent resistant to the disease.

Under the Western Cotton improvement scheme, Hagari, breeding work was taken up to replace Westerns-1 by a better variety and less wasty type to suit this area where rainfall is eratic. As a result of a good number of promising early strains have been evolved mention may be made of 387 iv-1 and 4709. These have proved to be better than W-1 in Bellary and Chitradurga districts.

The breeding work initiated for the improvement of herbaceum cotton for Hyderabad Karnatak area has resulted in the isolation of four wilt resists strains namely, 5117, 5118, 5473, and 5912.

Under the scheme for breeding Long Staple Cotton for T.B.P. area where Lakshmi Cotton is highly susceptible to Jassids and blackarm disease, continued studies and crosses were done and as a result the strains 5110 and 5216 were isolated. These are undergoing district trials.

(SRI H. C. BORAIAH)

The scheme for control of cotton pests in Mysore was started with the object of studying the incidence and habits of various cotton pests in Mysore State and also the effects and economics of controlling them, thereby enhancing the yield of the crop ultimately. The results obtained in this scheme have indicated that Cotton pests could be effectively controlled by insecticides like Savin, and Endrin and that higher yields of about 80 to 90 per cent could be secured by such control The farmer would therefore be greatly benefited if he adopt these measures :

7. *Coconut* : As a result of the work done by the Regional Coconut Research Station at Arasikere, the following have been recommended for adoption :

(i) The seed material collected during the Summer months of the year would be better for raising quality seedling.

(ii) Early planting of seedlings during June to August is preferable

(iii) Surface planting is not good when compared to deeper plantings

(iv) Seedling pulled out from primary nursery and planted within 4-6 days establish better.

8. *Arecanut*:—Work on Arecanut is being done at the Regional Arecanut Research Station, Tirthahalli and as a result of the work done on various aspects the following recommendations are ready for adoption :—

1. Seednuts may be sown vertically or horizontally as the germination is quicker and produce better seedlings.

2. Heavier seednuts may be sown as they give higher percentage of germination than light ones and produce better seedlings.

3. Seednuts may be collected from the bottom and middle portions of the bunch as they give better seedlings.

4. Application of 400 lbs of lime per acre with fertiliser every year and bulk manures once in 3 years gives higher yield.

5. Green manure crops can be grown very well in the garden as well as in the borders of nursery which provides shade during summer and considerable quality of green manure for mulch.

Finally it may also be mentioned that various experiments on different aspects like pathological, Agronomical, Chemical etc., are in progress at the various Research Stations, Scientific Sections of the department. It would take many years before definite results are obtained, but surely those valuable results will go a long way in ultimately contributing a great deal to the increased agricultural production.